HEALTH AND CULTURE IN EASTERN NEPAL

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HEALTH AND CULTURE IN EASTERN NEPAL

by

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When I was very young and the urge to be someplace else was on me, I was assured by mature people that maturity would cure this itch. When years described me as mature, the remedy prescribed was middle age. In middle age I was assured that greater age would calm my fever and now that I am fifty eight perhaps senility will do the job. Nothing has worked. Four hoarse blasts of a ship's whistle still raise the hair on my neck and set my feet to tapping. The sound of a jet, an engine warming up, even the clopping of shod hooves on pavement brings on the ancient shudder, the dry mouth and vacant eye, the hot palms and the churn of stomach high up under the rib cage. In other words, I don't improve; in further words, once a bum always a bum. I fear the disease is incurable. I set this matter down not to instruct others but to inform myself.

When the virus of restlessness begins to take possession of a wayward man, and the road away from Here seems broad and straight and sweet, the victim must first find in himself a good and sufficient reason for going. This to the practical bum is not difficult. He has a built-in garden of reasons to choose from. Next he must plan his trip in time and space, choose a direction and a destination. And last he must implement the journey. How to go, what to take, how long to stay. This part of the process is invariable and immortal. I set it down only so that newcomers to bumdom, like teenagers in new-hatched sin, will not think they invented it.

Once a journey is designed, equipped, and put in process, a new factor enters and takes over. A trip, a safari, an exploration, is an entity, different from all other journeys. It has personality, temperament, individuality, uniqueness. A journey is a person unto itself; no two are alike. And all plans, safeguards, policing, and coercion are fruitless. We find after years of struggle that we do not take a trip; a trip takes us. Tour masters, schedules, reservations, brassbound and inevitable, dash themselves to wreckage on the personality of the trip. Only when this is recognized can the blown-in-the-glass bum relax and go along with it. Only then do the frustrations fall away. In this a journey is like marriage. The certain way to be wrong is to think you control it. I feel better now, having said this, although only those who have experienced it will understand it.

John Steinbeck

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M.C.R.

New Haven, Connecticut
February 17, 1976

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Most people of the world are poor. This poverty is the precondition for the disease that afflicts them.

Most nations of the world are poor. They have less than $1 per person per year to spend on the health of their people.

Yet it is not money alone that will remedy this situation. Foreign aid efforts have taught us that the mere duplication of Western models of health care in a developing country is inappropriate and unsuccessful. The disease processes themselves may be the same ones that have now been eliminated from America and Europe but the imported models ultimately fail because the context is different. And this is what we will be concerned with here- the context of health care in a developing nation.

We have chosen the Kingdom of Nepal as the focus of our attention. It is one of the poorest nations in the world. It continues to be devastated by diseases that are now of only historic interest in the West. The urgency of their need is real. It is also one of the most beautiful countries in the world and visitors cannot but be struck by this paradox. The Himalayan Mountains that make transportation and communication so difficult, force one to live with a vigor and respect for the land that is not to be found in industrialized nations. And finally, its people are hospitable and kind and lasting feelings of fondness and respect easily develop for them.

We will begin by asking the simple, if somewhat oceanic question, "What are these people like?", "What are their needs?"

and then seeing how a basically western commodity such as a "health care system" must be offered so as to be harmonious and complimentary with the fabric of a Hindu agrarian society. We will try to answer this question by looking at the problem of tuberculosis in northeastern Nepal and seeing the special difficulties that its management and eradication present to a government with severely limited resources. We will see what lessons the problem of tuberculosis has to teach us and try to understand the implications of these lessons for the future planning of health services in Nepal.

THE PEOPLE

A. The setting in the East

Millions of years ago, comparatively recently in geologic time, the eastern coast of what was later to be Africa, split off from its larger land mass and began a slow drift north and eastward. Centuries later, it struck up against the Asian land mass and in the resulting collision the Great Himalayan Range was formed. Since man first populated the Indian subcontinent these mountains have had a profound influence on the lives and thought of the people who make south Asia their home. For those living in the hot dusty plains of India these peaks were thought to be the home of the Gods. They were imbued with a religiosity and mysticism that survives to this day in the pilgrimages of Hindu holy men to the source of the sacred Ganges river. For Western man they hold an attraction equally as profound for we know them to be the top of the world. It is a region of terrifying proportion, of an awesome humbling beauty, inhabited by a people whose traditions we view as mysterious and otherworldly. It is a frontier in which we see a challenge both physical and metaphysical. And so, we, who so much need frontiers to conquer, are drawn, too, to the Himalayas.

For the people of Nepal, though, their landscape- which so captivates outsiders whose natural terrain is less spectacular- is of course a commonplace. The accommodations that they must make to life in this mountainous land pervade everything -

they do. The harsh landscape makes travel difficult and has thus encouraged social relations characterized by the strong bond of family and village. It has effectively precluded the easy transportation and communication needed for the development of industry and a cash economy. The people remain subsistent level farmers and the hard work of such living has reinforced the logic of large families. So it is appropriate that we begin to look at the people of Nepal by first looking at their land so that we can appreciate how it has defined the nature of their lives and the terms of their livelihood.

The Kingdom of Nepal is a rectangle of land approximately 500 miles from East to West and 100 miles from North to South. (see page 9) Its eastern, western and southern borders are with India and it shares its northern frontier with the Tibetan Region of the Peoples Republic of China. Its 11 million people are composed of 15 major ethnic groups speaking 36 dialects.[1] The common language uniting such a disparate populace is Nepali, an Indo-Aryan tongue, which itself is a dialect of Hindi. Hinduism is the state religion and the King derives his authority, in part, from the popular belief that he is an incarnation of the Hindu deity Vishnu. The religious traditions of its many peoples are varied and complex combining elements of the orthodox Hinduism of the Indian plains, the local animist beliefs of the indigenous populace and the understandings of Tibetan Buddhism brought by the early Mongolian settlers who emmigrated from the north.

Nepal is composed of three distinct climactic zones which run from the northwest to the southeast. The southern most belt is the Terai, a strip of land that extends some 30 miles into the interior from the border with India. Geographically it is continuous with the Gangetic plains. It is flat land whose average elevation is only 150 feet. The heat and humidity are debilitating and until only recently, its jungles were malarial. It is the last natural refuge of the Bengal tiger whose numbers have been diminished by the enthusiasm for hunting, first developed by the local maharajas and quickly passed on to the British.

The Terai contains the best farmland in Nepal. It produces most of the wheat and rice and all of its sugar cane and jute. The surplus foodstuffs grown here are carried by porters over narrow mountain trails to supply large areas of the foothills where agricultural production does not meet the needs of the populace.[2] A portion is also sold to India which combined with tea grown in the foothills, is the country's only exportable resource.

With the exception of the Kathmandu Valley, the Terai contains the only paved roads in Nepal. There are several motorable roads which run from the beginning of the foothills to the Indian border, there meeting with the rail head that carries crops for sale throughout the subcontinent. These north-south linkages are connected by an east-west highway currently nearing completion under the combined aid programs of Britain,

India and Russia.

The population density of the Terai is 258/sq. mile,[3] nearly twice the density of the foothills to the north.

The Terai is not characteristic of the rest of Nepal. When one walks down out of the foothills one sees ahead the flat plains that extend southward for hundreds of miles. It is as though one were about to enter a new land. The ease of communication and transportation, the density of people, and the relative wealth of the area clearly distinguish it from the rest of the country. These differences become more dramatic when juxtaposed to the relatively primitive conditions existing in the foothills.

The middle climatic zone is the Hill region where most of the people live. The elevation rises quickly from the northern reaches of the flat Terai and extends to an altitude of 13,000 feet. This abrupt change in topography can occur within a distance of only 75 miles. The climate here is considerably cooler than the Terai. The monsoon rains begin in May and by the end of September have drenched the hillsides with more than 70 inches of rain.[4] This converts the dirt paths into quagmires of mud or after an especially prolonged rainstorm into newly formed mountain streams. During this five month period communication and transportation is at best difficult. Most travel is impossible.

The economy of the Hills is based on subsistent level farming. The staple is rice. Two crops are grown each year.

The agricultural practices of the people are primitive. There is reliance on low productivity strains and significant loss of arable land due to soil erosion.[5] Crops grown in excess of family needs are traded for other foods or are used to purchase manufactured goods (cloth, brass and steel containers, brushes) at the biweekly bazaars.

The Bazaar is a prominent fixture in the social and economic lives of the Hill people. On the day of the Bazaar, large numbers of people will come to the village or town from their homesteads on the surrounding hillsides, often walking as long as five hours each way. There they will buy and sell merchandise, socialize with old friends, gossip, tell stories, sample the sweets made with great flourish by the local candy maker, and imbibe (generously) of raksi, a potent alcoholic beverage brewed from fermented millet. Given the rugged terrain and the isolation of most of the homesteads, the bazaar serves the vital functions of economic exchange and social interactions. It is an institution of central importance to these people.

The third climactic region of Nepal is the northern extension of the foothills into the Great Himalayan Range. It rises up to 29,000 feet at the summit of Mt. Everest and contains the peaks of Makalu, Kanchenjunga, Nuptse, Lohtse, Annapurna, and Dhaulagiri. It is uninhabited save for the Sherpa who use the lower extent of the region for summer grazing. Several mountain passes are clear most of the year and this has enabled

expeditions in the past to establish commercial ties between the foothills and settlements on the arid Tibetan plateau north of the Great Himalayan range. The Chinese government has now closed the border to Tibet, thus terminating the traditional trading routes that had linked the Tibetan capital of Lhasa with Kathmandu and Darjeeling and ultimately Calcutta on the Bay of Bengal.

Kosi and Mechi are the two eastern most zones of the Kingdom of Nepal. (see page 10) They contain each of the three climactic regions previously described. Sunsari, Morang, and Jhapa are administrative districts in the Terai of southeastern Nepal. The east-west highway runs thru these districts, providing a paved road to the railhead in Naxalbari, India. Another paved road runs north to south connecting the British Military Hospital at Dharan (established to minister to the medical needs of retired Gurkha soldiers and their families) with Biratnagar, the second largest town in Nepal (next to Kathmandu) and the nation's major industrial center. The north-south road links up with the railhead just over the border from Biratnagar, in Jogbani, India. Bus service on these roads is frequent and reliable. There is unrestricted passage for Nepalese and Indians across their mutual border.

Biratnagar is the home of the opposition and now outlawed Nepali Congress Party.[6] The King's government in Kathmandu has only a tenuous control over the political loyalties of the people here. The party is made up of middle class merchants

and businessmen who feel their economic aspirations and entrepreneurial talents thwarted by the heavy taxation imposed by the King (Maharaja in Nepali) which they believe benefits only the King's relatives and a small group of wealthy land owners. It is widely assumed that the Nepali Congress Party secretly receives funds from the Indian Congress Party of Indira Ghandi whose socialist domestic policies are mocked by the existence of her northern border of the sub-continent's last ruling maharaja.

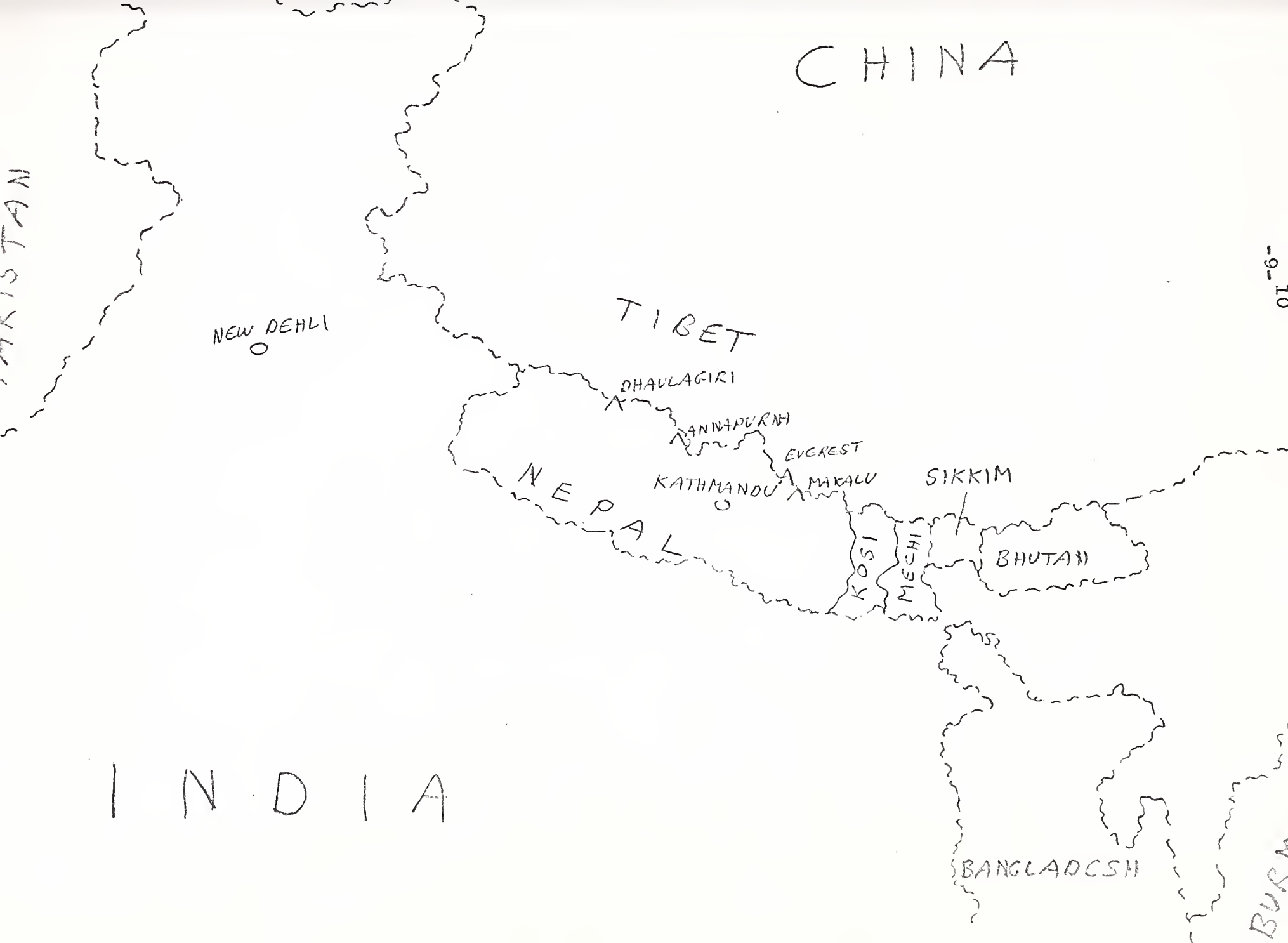
The remainder of Kosi and Mechi, with the exception of the northernmost reaches, are in the foothills of the Great Himalayan range. It is populated by several ethnic groups of which the Limbu (Limboo) and Rai (Rye) are numerically the largest as well as being historically the oldest inhabitants of the region. Within the past century there has been an influx of high caste Brahmins which has had significant influence on the economic, political, and social character of the area.

The foothills of eastern Nepal are drained by the many branches of the Kosi River. The river is not navigable. It is crossed by suspension bridges whose safety is uncertain. When these bridges collapse they are seldom rebuilt and travelers must then wade across the river. During the monsoon, the branches of the Kosi become raging torrents, which in the absence of reliable bridges, provide yet another barrier to transportation in a region where such activity is difficult

even in the best of times.

The foothills of this part of Nepal differ from the central and western foothills in being more densely populated. There are only 430,000 acres of arable land in the eastern foothills or about 1.42 acres of arable land per family.[7] It is the rising population as much as the poor farm lands and low productivity strains that account for the poverty to be found here.[8] (We will have more to say on this point later).

Ilam, Dhankuta, Teratum, Phidim, Chainpur, and Taplejung are administrative centers with a bank and a post office. They all have bazaars at least once every two weeks. Only Dhankuta has electricity.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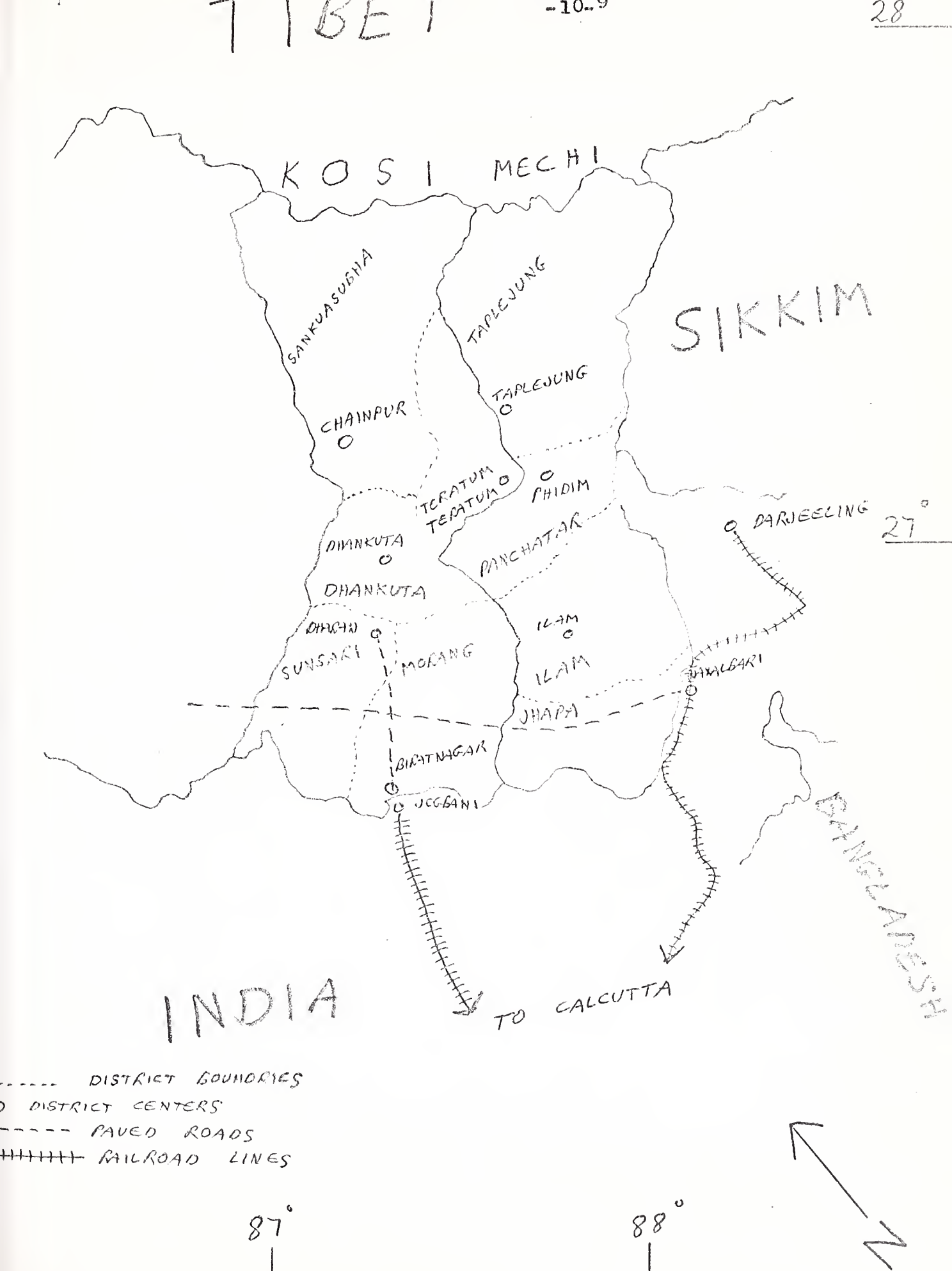
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B. Hinduism- The Substrate of their Existence

Hinduism differs from the other great religions of the world in its conspicuous absence of a founding figure. It lacks a Christ, a Mohammed, a Buddha- a living individual in whose actions can be found the tenants of that faith. Hindu religious beliefs have instead developed over thousands of years from local cultic and shaministic practices whose origins we shall never know. Its traditions are varied and continually evolving.

The richness and complexity of Hinduism is mirrored in its conception of Deity as the Supreme Being who is Brahma (god of creation), Vishnu (god of preservation), and Shiva (god of destruction). Various sects have chosen to worship the deity in the form of one of these gods and their rituals and beliefs have differed accordingly. This religious diversification is extended further to the countless demigods who themselves are the object of cultic allegiance. Hinduism then is a religion offering its people a profusion of deities for veneration and tolerating wide variation in religious practice.[11] It is best then not to think of Hinduism as a religion as such but rather to think of it as being the totality of the varied religious expressions of the Hindu people.

Yet underlying what at first might appear to be a theistic anarchy can be found a moral tradition and social order which is well recognized and rigidly followed by all those whom we call Hindu. It is important to delineate this tradition and to

understand the social order it creates as a necessary means of understanding the Hindu people.

The word Hindu is derived from the earlier form Indu, which was used to describe the inhabitants of the Indus River Valley in what is now Pakistan. It is to this region that we must look for the earliest known beginnings of the Hindu tradition.

Not much remains of the civilization that thrived in the Indus Valley three millenia before the birth of Christ.[12] About all that is known is drawn from the ruins of the two ancient cities of Mahenjo-daro and Harrappa. But from these ruins and the meagre artifacts that have been unearthed there, we have learned much about the practices of the Indus Valley people and are able to identify concerns, that through thousands of years of history, have remained as fundamental aspects of Hindu religious life.

The ruins of Mahenjo-daro give evidence of an extensive sewage system and large central bathing areas which firmly establish a cultural emphasis on bathing and personal purity[13]. Terra cotta figures of pregnant females carrying children suggest a concern for fertility. Stone carvings recently unearthed of rhinos, bulls, and elephants express a concern for the powers of nature and the seeming emphasis on horned animals belies an interest in physical strength and sexual power as aspects of this larger power of the natural world.[14]

Sometime during the second millenium B.C., a fair-skinned people from what is now Iran and Turkey swept down from the northwest and subjugated the people of the Indus Valley; the first of the many Aryan invasions that were to continue through the 17th century. The Aryans brought to India a polytheistic faith in which the forces of nature were personified in a hierarchy of gods- who represented the realms of heaven, sky and earth.[15]

The Aryans developed the complex ritual of the fire sacrifice as a means of expressing a spiritual correspondence between the heavenly order, the power of nature and human society. Through their fire sacrifice they invoked the god Agni whose essence they believed rose from the altar to be kindled anew in heaven. There the fire of Agni became the lightning and the thunder; and then he became the rain and returned to earth to be the water of the streams from which the bounty of nature grew. The strength of Agni became part of the trees that grew along the streams and man helped return Agni to heaven again by his repetition of the fire sacrifice.[16]

The ritual of the fire sacrifice was accompanied by the recitation of mantras. These were ritually prescribed sayings which by their sound embodied the truth of god.[17] Words convey meaning. Sounds convey a presence. Mantras were not concerned with the meaning of the words that composed them. Rather, the spiritual significance of a mantra was that its sound was an

aspect of the god. It was a quality, not merely a representation, of divinity. A mantra was the existence of god, not merely his invocation.

So we can see now that the manner in which the early Hindus developed the auditory sensation as an expression of their religiosity was radically different from the western tradition which relied so much upon visualization (Christ walking on water, the turning of water into wine, the rising of Lazarus from the dead). We must see that they were evolving ways of experiencing their faith that for us have no precedent.

Unlike the civilization of the Indus Valley, the early Aryan settlers to the subcontinent possessed an extensive religious literature. The Rig Veda, a collection of 1028 hymns composed between 1500 and 900 B.C., is the oldest religious text in the world which is still looked upon as sacred. The following excerpt describes the fire sacrifice of Purusa, the Cosmic Person.[19]

> When they divided the Man,
> into how many parts did they divide him?
> What was his mouth, what were his arms,
> what were his thighs and his feet called?
>
> The Brahman was his mouth,
> of his arms was made the warrior,
> his thighs became the vaisya,
> of his feet the sudra were born.
>
> The moon arose from his mind,
> from his eye was born the sun,
> from his mouth Indra and Agni,
> from his breath the wind was born.

From his navel came the air.
from his head there came the sky,
from his feet the earth, the four quarters from his ear
thus they fashioned the worlds.

Brahman (line 5) refers to the priestly class: the highest of the four Hindu castes. The warrior class refers to the Ksatriya: the princes and rulers who comprised the second caste. Vaisya (line 7) were low caste merchants and tradesmen, and Sudra (line 8) were those of the lowest caste fit only to sweep the streets and clean up the dirt of the higher castes. They were untouchable.

This portion of the Rig Veda, though it was written three thousand years ago, delineates a social structure which exists today in India and Nepal. It establishes a relationship between the natural world and human society as parallel orders of equal importance. It states that the placement of people in castes is as much an inexorable part of the divine order as is the moon, sun, wind and earth. These orders are connected by the sacrifice of the Primal Being and the logic of their relation is based on the experience and logic of human bodily functions.

The contributions by the Aryans of the fire sacrifice and Rig Vedas are central to the framework of present day Hinduism. The fire sacrifice established the importance of ritual as a means of participating in the divine order, and created a natural world imbued with the divine presence. As this tradition developed, it came to be felt that the forms of the world had meaning only to the extent that they participated in the ritual. This further evolved into the present notion that the phenomenal world is illusory and that only the mantra has metaphysical

reality. This forms the basis for the Brahmanical tradition which holds that the illusory quality of the real world extends to the body of man himself. The only truth is the essence of the Brahma, the god of creation. This is in all men, the natural elements and the sound of the mantras. It is then to this bit of Brahma in each one, that man must look for truth and not be misled by the designs of the phenomenal world. This notion is reiterated, implicity, in the Rig Veda where it is seen that the different classes of man all emmanate from a part of the Divine Being.

We have seen the development of the Hindu religious tradition over thousands of years. We must now ask what type of social order does such a tradition create. Many Westerners, when studying Hindu society, are appalled by the gross inequities of the caste system. The separation of people into the rigid hierarchy of caste offends the western notion of egalitarianism. The use of moral law to justify such a social construct seems outrageous. Nevertheless, it must be admitted that this society has been remarkably stable. Conquering societies from such disparate cultures as Moslem Persia, Protestant England, and Catholic Portugal, though clearly establishing themselves as military powers, had been ineffective in altering the basic social organization of the Hindu masses. We must ask ourselves how this could be? What is it about Hindu social life that makes it so seemingly impervious to outside influences? How could a system so obviously inequitable to us, survive for

so many thousands of years? How are people socialized into patterns we would find intolerable? What is the source of its stability and what does this tell us about how Hindus see themselves.

The Rig Veda outlined the religiously prescribed structure of society; but it only hinted at the moral law which is the source of its stability. To more fully delineate this moral law, we must consult the teachings of the Bhagavad-Gita which will help us to understand the concepts of Dharma and Karma. For it is in these two understandings that we will come to appreciate the ethical focus of Hindu social life.

The concept of Dharma is complex but as a beginning we can say it translates as "function" or "duty."[20] The Rig Veda posited the caste system as an inexorable part of the divine order. As the concept of Dharma evolved it came to be felt that the harmony of the Divinity depended upon the harmony of society. Each person's Dharma was defined by his caste position. It was the sum of those social functions that must be performed to maintain the proper functioning of the social order. Any attempt to change ones Dharma- to perform a Dharma that was not proper to ones caste would be to threaten the stability of the heavenly world. Since the integrity of the Divine order depended upon the performance of these functions, they came to be appreciated in a religious sense as "duties."

All men, then, were essential to society. It was of no real importance whether their position was that of a Brahman

priest or an untouchable who swept the streets. The proper functioning of society, and thus the maintainance of the divine order, depended upon the fulfillment of rigidly decreed social functions by each member of society. The Bhagavad-Gita teaches that the goal of human perfection is tied to Dharma.

> Now you shall hear how a man may become perfect, if he devoted himself to the work which is natural to him. A man will reach perfection if he does his duty as an act of worship to the Lord, who is the source of the universe, prompting all action, everywhere present.
>
> A man's own natural duty, even if it seems imperfectly done, is better than work not naturally his own even if this is well performed. When a man acts according to the law of his nature, he cannot be sinning.
>
> --- The Yoga of Renunciation[21]

The societal implications of such a religious doctrine is to create a system which severely limits personal expression and establishes a relationship between caste groups which is non-competitive and interdependent. Implicit in the concept of Dharma is the belief that the social order is a reflection of Divine knowledge. The religious injunction to fulfill ones Dharma has the parallel function of maintaining the status quo.

Karma can be understood as the actions necessary to fulfill ones Dharma. Both Karma and Dharma are intimately related to the Concept of Brahma- the holy presence in all things. It is dedication to ones Dharma that enables one to achieve that perfection in which his bit of Brahma will join the totality of heavenly Brahma which is believed to be the only Reality. The fulfillment of Dharma and the salvation to be achieved through

merger with the heavenly Brahma can be seen, then, to depend upon Karma.

Since the only reality is the reality of Brahma which is in all things, Karma which evokes egoistic attitudes, which seeks to glorify the phenomenal self, is Karma that is ritually impure. The Bhagavad-Gita teaches that Karma (action in service of Dharma) must be devoid of self concern.

> Ever engaged
> In his meditation
> on Brahma the Truth,
> And full of compassion;
> When he casts from him
> Vanity, Violence,
> Pride, Lust, Anger
> And all his possessions,
> Totally free
> from the senses of ego
> and Tranquil of Heart:
> That man is ready
> For oneness with Brahma.
>
> --- The Yoga of Renunciation[22]

An aspect of this self concern is an interest in the consequences of ones actions. It is here that the ethical attitudes of Hinduism differ so fundamentally from those of Western religious traditions. It is wrong for a Hindu to believe, "I am important" because the only importance is the ultimate reality of Brahma. It is equally wrong for them to believe "I made this happen," for that also aggrandizes the self and thus detracts from Brahma. The only way, then, by which Karma can remain pure is for the individual to dissociate his actions from their

consequences. By doing this he insures that his actions will be selfless and that Brahma will be served. The Gita instructs:

> But he whose mind dwells
> Beyond attachment,
> Untainted by ego
> No act shall bind him
> With any bond:
> Though he slay these thousands
> He is no slayer.
>
> --- The Yoga of Renunciation[23]

And elsewhere it states:

> The act of sacred duty,
> Done without attachment,
> Not as pleasure desired,
> Not as hated compulsion,
> By him who has no care
> For the fruit of his action:
> That act is of sattwa.
>
> The doer without desire,
> Who does not boast of his deed
> Who is ardent, enduring,
> Untouched by triumph,
> In failure untroubled:
> He is a man of sattwa.
>
> --- The Yoga of Renunciation[24]

The dissociation of action from its consequence is a difficult concept to appreciate. It is somewhat analagous to the dissociation of sound from meaning in the Mantras. The difficulty in appreciating these concepts is a measure of the basically different modes of conceptualization used by Hindus and those from a Judeo-Christian tradition. It is an expression of of why the two groups have had such difficulty understanding one another. They think in different terms.

The properly understood concept of Karma is the central ethical concern of Hindu thought. It has established a society whose moral cohesiveness depends upon the maintainance of a formal structure of human relations with little concern for the quality of interpersonal relations. It is this structure of human relations that is felt to reflect and support the structure of divine order. The ethical position of Karma has served to mute self-expression while wedding social stability to a need for religious salvation. In so doing, it remains one of the most concervative social doctrines in the world.

C. Brahmans and Limbus- Competition for land and power in the multi-ethnic society of Eastern Nepal

Long ago in the mythic past, ten brothers emigrated from Benares in the Indian plains to the foothill region of what is now eastern Nepal. There they encountered cruel rulers whose oppression they could not endure. The brothers and their families rose up and defeated their oppressors. Through generations they prospered and established a sovereign nation- Limbuan, Land of the Limbu.[25]

During the 17th and 18th centuries high caste Brahmans (members of the priestly class) fled to Nepal to escape the expanding influence of the Mogul (Moslem) invaders in northern India.[26] There they settled in the Kathmandu Valley where they quickly became the political rivals of the Newars who ruled the valley as a Buddhist Kingdom. Two hundred years ago the Newari rule was toppled by the expanding Brahman populace and the state was converted to a Hindu Kingdom under the Thakuri dynasty.[27] The political and military power of this Hindu nation grew and it began to increase its territorial holdings- gradually moving out of the Kathmandu Valley and proceeding further and further east. In the late 18th century it came up against the deeply entrenched power of the Limbus.[28] For reasons that are not well known, war was avoided. The Limbus proffered loyalty to the Hindu Kings of the Kathmandu Valley and in exchange received permanent ownership to their land as well as a degree of self government.

Soon after that agreement an influx of high caste Brahmans into Limbuan began that has continued to the present day. The social history of eastern Nepal is the story of competition between these two ethnic groups for political power and the limited economic resources that the region has to offer.

The mythic beginnings of Limbuan notwithstanding, the Limbus are of Mongolian racial extraction. They are the indigenous people of eastern Nepal who, in the years before the advent of the Brahmans, developed their own cultural institutions.

Limbu religion is a malleable collection of animist beliefs which can take on the patina of Hinduism where neighboring people are Hindu but can also adopt the customs of Buddhism where the surrounding populace is Buddhist.[29] They pay homage to deities of the mountains and streams but the center of their religious belief is worship of household gods. These gods are brought with a bride to her husband's home when she marries, making the gods of a particular household an expression of maternal lineage.

There are no sacred scriptures to compare with the numerous religious texts of the high caste Brahmans. This is taken by the Limbu to indicate their own cultural inferiority. According to Limbu storytellers, the Sages wrote the holy books and floated them down the rivers. Both Limbu and Brahman found them, but the Brahman studied them, while the Limbu ate the covers and used the pages for fire. The reasons for this self-criticism

are obscure. But the poor self-image that it indicates is perhaps one reason why the ancient power of the Limbu has been so widely eroded by encroaching Brahman influence.

Limbu customs allow for three mechanisms of marriage. A marriage may be arranged by members of neighboring, but unrelated families. In this case, the groom must present a sum of money to his father-in-law to compensate him for the loss of his daughter. He must also honor his bride's relatives with a feast of meat and liquor. In addition he must make annual pilgrimages with his wife back to her home where each time he must present his father-in-law with gifts. An arranged marriage can net the father of the bride approximately 1000 rupees ($100.). This, where the average yearly income is only 1650 rupees[31], becomes then, a substantial sum of money. Thus the marriage of a daughter is a source of continuing material wealth to a Limbu and a man with many daughters is felt to be fortunate. This, as we will soon see, is in marked distinction to the Brahman who is thought to be spiritually deprived by having daughters.

Marriages may also be effected by the elopement of an unmarried girl. In this option, the marriage becomes official when the girlhas been away from her home for at least three days. Upon returning to the home of the bride's father, the couple announce the marriage as a fiat accompli and it is accepted.[32] Lastly, a Limbu marriage may be accomplished by theft. A sum of money must be given to assuage the pride

of the former husband (usually about 450 rupees) but once this is done, the marriage is as proper and respectable as one that is arranged.[33] A pre-marital pregnancy does not reduce a woman's chances of finding a husband.[34] The vast majority of marriages are monogamous.

For the Limbu, a man's material wealth is his farmland. It is inherited equally by all his male and unmarried female children.[35] When a son marries he is entitled to his portion of the land. When all the children have left home to start their own families, the parents are entitled to keep a portion of land for themselves to farm in their old age. When parents die, this remaining land is also divided among the heirs.

Before the Brahmans came to eastern Nepal, the Limbu controlled vast land areas and farmland was plentiful. This was their source of wealth as a people. With each generation, however, landholdings came to be divided into smaller and smaller portions. A point was reached after many generations, where the Limbu could not support his family on the land given him. He was forced to borrow money from wealthy but landless Brahmans. As interest on the principle, the Brahman obtained farming rights to part of the land, reducing further the acreage the Limbu could cultivate-thus perpetuating his need for capital.[36] With each loan, the acreage of his farmland was again reduced renewing his need for

additional capital. A viscious cycle was established and the Limbu sank further and further into debt.

It is important here not to see the Brahmans as villans. It was the Limbu tradition of equal inheritance that was the principle source of the economic and political decline. The mathematics of this mode of inheritance are inescapable. Faced with a fixed amount of land and a slowly but steadily increasing population[37] it was only a matter of time before the size of farm plots proved insufficient to meet family needs. Brahmans arrived in eastern Nepal at a time when their capital was needed by the well-landed yet poor Limbus. It was this historical circumstance that allowed for the slow but relentless transfer of power from the indigenous Limbu to the high caste Brahmans.

The Brahmans of eastern Nepal observe all the customs and proscriptions that define their religiously superior position. The requirements of caste membership influence all aspects of their daily like. This reflect a fundamental fear of ritual and physical pollution which has its antecedants in the concern for cleanliness first documented by the ruins of the public baths of the Indus Valley Civilization. It is a concern which has informed Hindu tradition now for five thousand years.

Their fear of pollution is indicated by their attitudes towards food and menstruation. In the Brahman household, the kitchen is an area that can only be approached by rit-

ually qualified people. This includes adult males and non-menstruating females and specifically excludes children and members of any other (and thus lower) caste. Before Brahman males may enter the kitchen, they must perform ritual bathing, especially of the feet, and don a special white loin cloth which is only worn at meals. At the end of each meal, the cooking area is replastered with dung and clay.[38]

Cow manure might seem an inappropriate material for Brahmans to use in their kitchens, an area of the house that must remain ritually pure. It indicates that the perception of "dirt" is culturally determined and thus relative. It means that Brahmans and Westerners do not "see" the same objects as being "dirty". This difference in perception presents obvious problems to health workers attempting to inculcate concepts of cleanliness which might not be concordant with those of the native populace. It is a complex, frustrating problem affecting all transcultural health efforts.

Most Brahmans are strict vegetarians. Some will eat goat and sheep on rare occasions. They never eat beef. Their caste restrictions forbid them from eating food cooked by non-Brahmans. It also prohibits them from eating with members of other castes even if the food is cooked by a ritually qualified Brahman.

The fear of pollution that defines their eating habits also establishes strict rules for treating women during their menstrual periods. When a young woman has her first bleed

she is immediately removed from the house and placed in a separate dwelling for two weeks. During this period she must not see any of her male relatives for fear of contaminating them. She is considered untouchable even by other women. During her second cycle this confinement in repeated for seven days and during the third cycle for four.[39] A woman is untouchable during the first four days of her menstrual cycle. At the end of this period she must bathe and wash all her clothes before she again can cook for and touch male members of her family.

Brahman marriages differ from Limbu in the absence of free choice. All marriages are arranged, preferably before the female reaches puberty, and are validated for divine acceptance by an astrologer.[40] Divorce is not an option as it would be an affront to the divine order. Whereas Limbu ceremonies are joyous occasions accompanied by much dancing and drink, a Brahman ceremony is a somber affair in which a priest intones from holy scriptures. This difference in the ceremony reflects a basic difference in temperament between the two groups. The quality and extent of prohibitions affecting the lives of Brahmans is at least Victorian in scale. In contrast, the good natured gregariousness of the Limbu make them (... to extend the metaphor) the Irish of Nepal. These basic differences in temperament make the Brahman appear arrogant to the Limbu and the Limbu appear primitive

to the Brahman. It is a fundamental cleavage between these two groups that is reinforced by differences in racial origin and by the prerogatives of caste.

D. A Health Profile of the Hill People-Their Problems and Resources

The diseases that afflict the hill people are a function of their poverty. The way in which they come to understand them is related to their Hindu beliefs and their ability to seek medical assistance is determined by the mountainous terrain and the limited government resources. A national health policy must take all of these inter-related concerns into account when attempting to determine appropriate health measures. Before we look at this problem, specifically as it relates to the management of tuberculosis and in a larger sense to general health care planning, we must first have an appreciation for the matrix of health problems that affect the hill people of eastern Nepal.

Of these, the one least ammenable to solution are the related concerns of family planning and population control. The present population of Nepal is about ten million and it increases at the rate of 2.7% per year[41]. The infant mortality rate is 150 per 1000 live births.[42] 37% of all deaths are infant deaths and 19% of all deaths occuring after infancy occur before age 5.[43] A poll of women over fifty years of age indicated that approximately half of their children were alive. Most women would have six live births in order to have three children surviving to adulthood.[44] One half the population is under nineteen.[45]

The ideal family size is four or five children.[46] The presence of a male heir is important to all the peoples of the hill region but it is especially important to the Brahmans who require that a son participate in the funeral ceremonies of his parents. Failure to begot a son will mean that their funeral ceremonies will not be ritually acceptable and they will be forced to return in the next life as ghosts who will haunt their ancestors and bring bad luck on the household.[47]

Surprisingly, a large majority of women surveyed approved the idea of family planning though virtually no one used birth control methods themselves or even knew of any other women who did. This strong endorsement of family planning was found in women of all castes.[48] But since a family with at least four children is a widely accepted ideal, it appears that this interest in family planning may be an interest in the spacing of pregnancies rather than an absolute reduction in the size of families. The important point here is that the infant and child mortality figures are so high that it is necessary for women to have twice as many live births in order to have a given number of children survive into adulthood.

The problem of rising population and low utilization of family planning methods relates to the ideal of the large family as well as to the high child mortality rate. But

the ideal of the large family must be viewed as a problem separate from that of the high mortality rates. The vast majority of the Hill People are subsistance level farmers. Large families provide a definite economic advantage by supplying the household with a labor force to do the hard work of farming. In a land where family and kinship ties are so strong, the existence of a large family insures the parents that they will be taken care of in their old age. Finally, the participation of children in various religious ceremonies is viewed as important to the spiritual well being of the household. In a pre-secular culture such as rural Nepal, this is a very important function indeed.

The desire for a large family is a quality of the culture. It has a logic which is consistent with the aims of the culture and which provides real benefits for its people. A program which would seek to reduce the ideal family size by changing attitudes would have to compete with a cultural edifice which is centuries old. It also begs the question of whether, given the culture, climate, terrain, and economics of the area, the people might not in fact be worse off with nuclear families of two children.

The notion of family size is a culturally ingrained notion. It is unlikely that public policy could alter such a deeply held belief. This is not true for the problem of high infant and child mortality rates. The cultural need appears to be for a given family size though not a given rate of fertility.

The high number of children that a woman has in her lifetime is explained by the diseases that kill children in Nepal and which thus necessitate high fertility rates in order to sustain the ideal family size.

The issue then for a country like Nepal is how to deal with the problem of high mortality rates and fertility rates that are then encouraged. This question has importance not only for health workers but also for economic planners. The high numbers of live births per year necessitates that significant economic resources be shifted from productive members of society (older children and adults) to nonproductive members of society (small children). High fertility rates thus absorb large amounts of a nation's wealth and prevent it from making the types of capital improvements (roads, schools, hospitals) whigh would raise the general standard of living and which ironically are well associated with decreases in the rate of infant mortality.

There presently are two schools of though on how best to deal with the related phenomena of high mortality rates and high fertility rates. One contends[49,50,51] that a decrease in death rate through public health measures must precede a decrease in fertility rate as a means of convincing people that the need for multiple pregnancies to establish a family a given size is no longer real. Though this may be true it does not allow for the lag time needed for cultural

for cultural attitudes to catch up with the medical fact of decreased mortality. During this period, there is a danger of rapid increases in population caused by a situation of low mortality and high fertility. The other school[52] argues that public education must first be used to decrease fertility, so that subsequent decreases in mortality do not result in large population increases. This idea seems unrealistic. It is unlikely that fertility would be reduced in the face of high child mortality as this would threaten the concept of an ideal family. The issue remains unresolved.

The inability of public policy to reduce the rate of population increase reflects a deeply held cultural preference for large families. The inability to reduce infant mortality rates is a fuction of the people's poverty and living conditions which themselves are part of the larger problems of national development. We see that poverty sustains high child mortality. This stimulates high fertility rates which divert capital resources from developmental projects which seek to raise the standard of living. Thus poverty is perpetuated and through sustained high fertility rates, becomes its own cause.

The Nepalis eat twice each day. Each time they eat dhal bhat-rice and lentil beans. It is a menu which never varies. It is consumed every day, week after week, for a lifetime. It is no wonder that they eat their meals quickly

and do not make dining a social grace. This staple is supplemented with potato, spinach, pumpkin, dairy products and, only rarely, meat. From October through February, citrus fruits are plentiful. Eggs are available but are a luxury. This creates a diet with ample amounts of calories, thiamin and niacin. It is deficient in Vitamin A and Riboflavin. Because of the expense of eggs and meat, the major source of protein is lentil beans. This provides an amount of dietary protein which is low yet still great enough to prevent gross deficiency states. The amount of protein in the diet is clearly marginal and may be responsible for decreased resistance to infections and impeded growth.[53]

The average minimum per capita daily food intake for a typical hill village is[54]

Calories	2162
protein	11%
fat	13%
carbohydrates	76%

Protein	62.5	gms
Fat	41.2	gms
Carbohydrates	383.0	gms
Calcium	467	mgms
Iron	11.6	mgms
Vitamin A	826	I.U.
Thiamine	1.9	mgms
Riboflavin	0.8	mgms
Niacin	22.3	mgms
Ascorbic Acid	4.0	mgms

There is no iodine in the diet and goitres are common.[55]

The prevalence of leprosy is estimated to be 1% of the population.[56]

Due to a vigorous smallpox vaccination program sponsored by the United Nations, this disease process is now well controlled.[57]

The malaria eradication program has eliminated this disease from the hill regions though sporadic cases remain in the tropical terai.

The principle causes of morbidity and mortality are parasitic infections. This takes its greatest toll on young children who suffer significant disability from chronic and acute gastrointestinal and respiratory tract infections. As might be expected, human defecation is promiscuous. Water is frequently obtained from streams that run through rice paddies and pasture lands. During the Monsoon, fecal contamination is compounded.

When illness strikes, the afflicted can seek relief from western style doctors, local religious healers, or from practitioners of Ayurvedia- Hindu herbal medicine. Rather than competing with each other, the differing approaches to health care actually compliment each other because they seek to answer different questions.

Ayurvedia is a science peculiar to the Indian subcontinent. It has a tradition that is thousands of years old.

Its philosophical underpinnings are the Hindu beliefs in the importance of order, hierarchy, and harmony. As the caste system and the natural world are reflections of the divine order, so too is good health a measure of divinity. Disruptions in the normal state of well being are thought to be due to imbalances in the three fundemental substances: Auta (wind or flatulence), Pitta (bile or gall), and Kapha (phlegm or mucous).[58] The cause of the imbalance may be altered diet but more importantly, sickness is felt to be due to the displeasure of the gods or the spirits of ancestors. It is an expression in somatic terms of a disruption in divine harmony, indicating that social, economic, or religious boundries havebeen transgressed.[59] Ayurvedia offers the sick herbal preparations that will restore the balance of the three fundamental substances. Religious healers encourage the sick to wear charms and offer sacrifices as a means of propitiating the spirits they have angered.[60]

Western medicine operates on a level that is independent of religious values. It is concerned with altered physiology and seeks only to cure or at least make the ill comfortable. So the two systems of medical care can function together because that responds to different needs. The western physician asks the question " What is wrong ?". To the extent that his knowledge can relieve suffering it is justly appreciated. The traditional medical systems are concerned

instead with the ethical question "Why are the spirits angry and how can they be appeased?".

It is interesting to see that in an area where both services are offered the people have come to understand which kind of doctor is best for which kind of problem. For instance, for cough, fever, and weight loss, people will seek out the western physician who will give them Streptomysin, INH and PAS and there is some feeling that this is better medicine than that offered by the Ayurvedic doctor. However, if a man is upset because he has no sons, he will not go to a western physician because it is recognized that his medicine has no cure for this problem. He will instead seek aid from a religious healer or practitioner of Ayurvedia.

Eastern and Western medicine, then, both have something to offer the hill people of eastern Nepal. A national health care policy would be wise to make use of the knowledge of both traditions.

Hospitals and clinics are located in major towns. Some of these have physicians who are employees of the central government. They work for a period of three years before being re-assigned to hospitals in other regions of Nepal. Each hospital is given a supply of medicine to last the entire year. It usually runs out in three months. After that time patients must have relatives buy medicine for them in the bazaar. Most of the drugs are made in India and are thought by western physicians to be of poor quality. Below is a breakdown of health resources in eastern Nepal.[61]

HEALTH CARE RESOURCES AND PERSONNEL

	Mechi Zone	Kosi Zone	National
Population	581,245	835,025	11,289,968
Hospitals	3	2	34
Health Posts	4	18	197
Ayurvedic Clinics	6	3	82
Total Dispensaries	13	23	313
Ratio to Population (1 facility per)	44,700	36,300	36,100
Doctors	7	20	289
Nurses	3	19	195
Asst. Nurse Midwives	9	31	265
Sr. Auxillary Health Worker	3	5	80
Assoc. Health Worker	10	59	535

E. Living with the Nepali

Life in the villages and farms of eastern Nepal has not changed much in the past few hundred years. So any alteration in the pattern of daily life is cause for great interest. White people are still a rarity in many parts of the country and our arrival generated intense interest wherever we traveled. When we set up our vaccination centers each day I quite felt like the Messiah come. Crowds of children would huddle in groups a short distance away, laughing and giggling to themselves. I would say something to them in my fractured Nepali and they would laugh uproariously, repeating to themselves over and over the exact words I had said to them , no doubt much amused by my vulgarization of their language. Their enjoyment of this spectacle knew no bounds. They would laugh and laugh until a few ran away up into the hillside to make certain that their friends did not miss the further antics of this fair skinned buffoon from America. The adults were more circumspect, though no less interested. They would assemble in small groups and speak in hushed voices to themselves with an occasional glance and smile in my direction. The teenage girls were the shyest of all. They would try their hardest to look at me without my being aware and on occasion when our eyes met they would blush, laugh, and quickly turn their heads.

It appeared as though all the work of farm and home stopped when we arrived. Our hosts were polite and always gracious but for many we were objects not merely of interest but of wonder. And thus began the invariable stare. I had never before been the object of such intense inspection by so many people at one time. Groups would gather together standing a polite distance away and gaze at me intently for minutes at a time. Staring at my shoes, my blue sweater; inspecting from a distance my watchband and knapsack. All this attention made me mildly uncomfortable and I would frequently get up for a walk along the hillside to "recharge my batteries", regenerate my sense of privacy and dignity, and convince myself that despite all this attention, I probably was not all that interesting. This leave taking was generally respected in most places but in a few this merely signaled to the populace that the sideshow would now become a parade, as people, led by the couregous seven year olds, followed me in my walks along the hillside, no doubt asking themselves what exactly in God's name I was doing. In times like that, I frequently asked myself the same question.

But my tone of bemused whimsy quickly vanished when I had to deal in these circumstances with my need for privacy when defecating. My wife and I frequently were in situations where it was impossible to be alone. Wherever we went,

someone was usually follwing us in eager anticipation of what we would do next. Our only solution to this vexing problem was to return to the homestead where with Great Florish one of us would pull out my camera and announce that a group picture would be taken. Everyone, thankfully, would rush together to be a part of the portrait. While all this was going on the other would sneak out into the woods. The photographer would stall for time by giving great concern to balance in the picture: moving the tall young man from the right front to the left back, the short elderly woman from the side to the middle, and on and on for as much time as was needed. Looking back on this obvious hoax, I make no apologies for its gile. It worked. Everyone was happy and I was daily thankful that I had brought plenty of film with me.

The Nepalis spent much time and effort meeting the necessities of daily life. Living with them, we came to share these responsibilities. None of the villages or homesteads had running water. Each day began with a walk down to the river to fillup drums with water. Hoisting the heavy container up on my shoulder, the work of the day could not begin until I made the hike back up the hill whose incline had now magically increased during the few moments since I had so facilely skipped down. This ritual was repeated several times each day. At one village, Sharon tried to explain to the

women that in America each house had faucets and that water ran up into every house. They looked at each other in disbelief. Such was the distance between our two cultures.

Because water was difficult to transport, bathing and washing clothes always took place by the river or in the rice patties. In one village, the community bath was the trickle of water from a bamboo pipe in the middle of the ricefields. The tap was always open and men and women would gather together to bathe. Propriety dictated that men remain in their shorts and women were expected to wear a sarong. Etiquette required that one soap up away from the tap and only stand underneath at the conclusion of the bath. This reduced traffic around the tap and prevented the bather from tripping over the women who had squatted down to scrub her pots or wash her clothes.

Early on in my stay, I had decided that this rice patty business was not really for me. The river water was always cold and I decided that it was time I had a real hot shower. The British physician (a member of the Britain-Nepal Medical Trust) had rigged up a makeshift shower stall outside his house. It consisted of an old five gallon fuel oil drum with a penny sized hole in the bottom. This apparatus was suspended from the second story window and some rubber tubing ran down the side of the house into the top of an old orange juice can. The bottom of the can had been

poked with holes and so, Voila !, a shower. But first I had to heat the water which I had to lug uphill from the village tap. This necessitated building a wood fire and heating up the water on the dung stove. My boy scout skills, being somewhat deficient, it took me the better part of the afternoon to build a roaring fire and heat the water. Now- the real test: I had to lug this big drum of what was practically boiling water up two flights of stairs. The moment I poured it into the upper drum of the shower, the stop watch began. In a flash I raced downstairs, outside, around the corner of the house and into the shower stall. Within seconds, I was out of my clothes and under the shower. I realized, though, that the water would run out quickly and so I rubbed and scrubbed feverishly and rinsed myself off only a few seconds before all the water ran out. The entire shower could not have lasted more than a minute, though it was about two hours in preparation. It seemed to be more trouble than it was worth and I subsequently re- turned to the comradery of my colleagues in the rice fields.

As scarse as white people were in the hills white women were scarcer still. The scrutiny that I received daily was minimal compared to that reserved for my wife Sharon. Nepali women would frequently come up to her and ask how many children we had. When she told them we had none they asked how long we had been married. When she told them we had been married for four years, they looked at each other,

surprised and embarrassed that they had unwittingly uncovered our secret shame. One old lady comforted Sharon by telling her " Baini, Americama nani deri bistare aunsa." (My daughter, do not be concerned. In America, babies probably just come more slowly.) In one village, my wife told several women that she had decided voluntarily not to have children and that such was a common practice in America. They looked at each other disbelieving, but more important to us, somewhat offended that a woman would make such a choice for herself. We soon learned that social mores expected us to downplay our lack of a family.

It may be surprising to some that I can speak so fondly of a culture and people who stared at me so intently, had such rigid views on childbearing and family life, made me bathe in a rice patty and run away into the woods to defecate. Nevertheless, such was the case. It stems in part from the feeling of acceptance and belonging that eventually is extended to one living in a traditional village culture. I can appreciate now the social and psychic dislocation experienced in third world nations as people move from the traditional village to the modern city in search of a better livlihood. In the village, all people are made to feel wanted. Everyone belongs. Social interactions are intimate and enveloping. Once the crops have been planted, there is not much to do but wait for them to grow. Con-

sequently, people need each other and learn to enjoy each others company. There is an easy casualness and informality about life in the bazaar and one learns how to spend an entire day walking from shop to shop, talking with acquaintances, playing rummy with friends under a tree, sipping tea with your neighbor and in general not doing much of anything. An American can slip into this pace of life only gradually, often without realizing until, when he must suddenly break away, he feels the sense of loss and comes to understand how much these people have meant to him and how much he will miss them.

TUBERCULOSIS IN NEPAL-THE PROBLEM OF CHRONIC DISEASE MANAGEMENT

A. The Magnitude of the Problem

Tuberculosis is a public health problem of large proportion in most developing nations. It has an estimated prevalence of 1%.[1] It is not known how many people in Nepal are infected but it is reasonable to suppose that the extent of the disease roughly approximates that found in other poor nations. Though precise figures are not available, it is felt that tuberculosis is responsible for significant mortality in children and old people. It also produces wide spread morbidity among adults. The decrease in productive man-hours reflects itself in the loss of wealth to the family and the nation. The increased child mortality due to this disease encourages a high fertility rate which further drains resources.

Nepalis are susceptible to infection for many reasons. The importance of kinship ties has caused many to live in what are essentially family compounds. Relatives live close to one another and frequently move from house to house. It is common for three generations to live in one house. Most dwellings are made of clay and dung. They lack windows. Crowded living conditions and poor ventilation encourage the spread by droplet infection of the tubercle bacillus. The infection can develop quickly among family members and can easily be spread to relatives in nearby households. A diet marginal in protein may contribute to depressed immune

responses which may convert infection into fulminating disease.

Tuberculosis, then, is part of the way they live. It is intimately tied to their social patterns, choice of foods, natural materials available for building and to the physical rigors of living in the mountains. It is a disease of their social fabric.

B. The Role of the Britain-Nepal Medical Trust

The Britain-Nepal Medical Trust directs the anti-tuberculosis program in eastern Nepal for the central government in Kathmandu. It has been operating in Nepal now for five years and is funded through private charities in the United Kingdom. Its medications are purchased at cost or donated by American and British pharmacutical firms. BCG vaccine is prepared in Japan and donated under the auspices of the United Nations. The Trust receives no funding from the Nepalesse government. It is only authorized to provide professional services directly related to the control of tuberculosis. The central government does not permit the Trust to provide general medical care.

The Trust is staffed by approximately fifteen individuals. They are all Caucasian. A third of these are physicians who manage the tuberculosis outpatient clinics in Chainpur, Dhankuta, Ilam, and Biratnigar. Most of the staff and all of the physicians agree to work in Nepal for a period of two years. Their expenses as well as a modest salary are provided by the Trust offices in Britain. Members of the Britain-Nepal Medical Trust tend to be young adults. Several of the physicians are married and have small children. Members tolerate well the physical discomforts and hardships of life in Nepal. They all work extremely hard under difficult circumstances. The committment to their work is total.

Their affection for the Nepali people is genuine.

The medical staff of the Trust have recently become dissatisfied with the limited health care responsibilities that they have been given by the central government. They have questioned the effectiveness of the outpatient clinics and have been discouraged by their meagre results. They have come to see that their sophisticated skills have not been well utilized and are upset at their inability to use their special training for the broad benefit of the Nepali people. Their disillusionment is an expression of the inappropriateness of the western model of medical care that they have been providing. The doctor-patient, one to one, curative type skills that are the basis of western medicine are poorly suited to the problem of tuberculosis medicine in Nepal. We will see that the proper role for the physician in a developing nation is not that of clinician but rather that of administrator, policy maker, and supervisor of a health care team composed primarily of paramedical personnel. The Trust physicians erred in bringing western physician-intensive, curative medicine to an area that was not equipped to make effective use of it. The dissatisfaction and frustration arose when they realized that though the skills were certainly valid, the context was radically different and not amenable to the form of medicine in which they had been trained.

A study of the accomplishments of the Trust will make this point clear.

C. The Curative Effort

The Britain-Nepal Medical Trust has made a major commitment to the establishment of outpatient tuberculosis clinics in the foothills of eastern Nepal. Each clinic is run by a British trained physician with the assistance of one or more paramedical personnel. The clinics in Ilam and Chainpur lack electricity, X-ray facilities, and a laboratory capable of culturing pathogens. The clinics in Dhankuta and Biratnagar do have electricity and an X-ray machine. The clinic in Biratnagar is in the Terai where population is denser and transportation easier. It sees a larger number of the TB patients. Knowledge of the clinics has spread by word of mouth over the past few years and most of the cases are self-referral. All of the clinics in the Hills (Ilam, Dhankuta, and Chainpur) only operate in the mornings, there not being enough patients to keep them open all day.

A major frustration with the clinic program is that it is underutilized. As the table below indicates, patient demand for this service is not great enough to make efficient use of the physician's time.[2]

AVERAGE # OF NEW AND REFERRED TUBERCULOSIS PATIENTS PER MONTH

Clinic	1972	1973
Dhankuta	23	30
Chainpur	9	9
Ilam	*	22
Biratnagar	*	80

* The Ilam and Biratnagar clinics did not open until 1973

These are important statistics because they are a measure of the need for physician's services. Once the diagnosis is made, the patient need only see the physician for the management of the occasional drug reaction and for three or four month check-ups. Sputum-positive patients or those presumed to have TB on the basis of history and physical exam, are encouraged to remain in the clinic village for two months to receive daily injections of Streptomysin. This request involves a major disruption in their lives and many are not able to stay for a full course of injections. Arrangements can sometimes be made for patients to receive Streptomysin injections in their home villages if a government trained health worker lives there. Therapy consists, in addition, of INH and PAS taken daily for a total of 18 months. Patients are given a four month supply of medication and asked to return to the clinic when the medication is finished. There they are weighed, seen by the physician and given a new supply of medication, all of which are provided free of charge.

The important point is that most of the work is done by paramedical personnel so that the physician functions mostly as a diagnostician, leaving routine therapeutic management to others. The diagnosis, itself, is usually routine and is frequently performed in a satisfactory manner by visiting medical students from Britain and America. We conclude that the time and skill of physicians are not well utilized in this type of arrangement.

If physicians cannot be efficiently employed in the Hill

Tuberculosis clinics, the question must then be asked whether the curative service itself is being well utilized. That is, even if the physician himself is not well utilized, is the existence of a clinic with paramedical personnel and free medication being used to a great extent by the people in the area? The table below describes the utilization of the Ilam TB clinic as a function of the number of hours people must walk to get there. The traveling times are approximately those of a healthy young male. For older people, they are probably greater. For those debilitated with active TB, they are assuredly greater. The table also makes reference to the number of defaulters (people who fail to continue their treatment). This is an important problem that will be discussed later.

UTILIZATION OF THE ILAM TUBERCULOSIS CLINIC

Distance from Clinic	# of Patients	# of Defaulters	% of Defaulters
0-2 hours	112	30	27
3-5 hours	56	29	52
6-8 hours	44	19	44
2 days	29	8	28
3 days	16	1	6
4 days	1	0	0
Total	258	87	

From this table it can be seen that most of the people who use the clinic (and as we will see later, most of the people who default during treatment) live reasonably (by Nepali standards) close to the clinic. Those who live less than 8 hours walk from Ilam can make the trip in one day and thus save themselves the

inconvenience and expense of spending the night in town. Of the 258 patients then being seen in the clinic fully, 212 or 82% lived within a one day roundtrip jorney to Ilam. To make the point more dramatically, 112 people- 44% of those utilizing clinic services, live less than a 2 hour walk from Ilam. A two hour walk may seem to us an arduous journey indeed, but for the Hill people it is a trivial distance. The point to be made by all this, is that the clinic seems to be utilized overwhelmingly by those who live close to it. Though it was established with the idea of being a regional curative center, it actually is utilized only by those living in the immediate area.

The Ilam Clinic had only been in existence for one year when this data was obtained; so the poor utilization by those further from the clinic may reflect their ignorance of its existence. It is difficult to know how much this contributes to the figures shown, though we suspect that the existence of the clinic is well known throughout the region. Ilam is the capital of the state as well as a major commercial center. The town lies on the major trail linking the foothills with the Terai so that large numbers of people frequently pass through. In this circumstance, the existence of a British physician that gives free medicine (...that works) is not likely to remain a secret. The conclusion to be drawn from this table is that the clinic is largely a convenience to the people in the immediate area of Ilam; and that in a nation with such a high prevelance of tuberculosis, its potential is not being actualized.

An interesting sidelight to the problem of utilization is the disparity between the sexes. Of the first 300 patients seen at the Ilam Clinic, 194 (64.7%) were male and only 106 (35.3%) were female- a difference of almost two to one. Thus, even if we could reduce the physical and economic problems associated with reaching the clinic from outlying areas, we are still faced with a cultural impediment that prevents women from availing themselves of this medical service. The reasons for this cannot be precisely articulated, but probably are related to female responsibilities for childrearing and much of the heavy farmwork. There may also be some reticence to being examined by a strange male.

So, given all these constraints on the efficient utilization of the clinic, what type of results does it show for the people who can and do make use of this service? Figures from clinic records indicate that while a small number of people are completely cured of their tuberculosis, the functioning of the program is marred by a large number of people who default during their treatment and are lost to followup.[3]

ANNUAL SUMMARIES OF TUBERCULOSIS CLINICS OPERATED BY THE BRITAIN-NEPAL MEDICAL TRUST

	1972	1973
1. Total TB patients on record (cumulative tallies)	1057	2410
2. Currently attending	395	1191
3. Total cured	139	484
4. Total died	65	142
5. Total defaulters	404	551

The sum of items #2 through #5 does not add up to #1 because each year a number of patients are referred to physicians outside of the area supervised by the Trust- many patients continuing treatment under medical aegis in Kathmandu or Darjeerling, India. The relative decrease in the number of defaulters and the increase in the number attending in 1973, is associated with the opening of the new clinic in Biratnagar. This is the second largest city in Nepal. It is located in the relatively populationdense Terai and has the advantage of good communications and transportation linking it with the more outlying areas of the Terai. As we discussed in Chapter One, the Terai is a fundamentally different type of region than the Hills, so that when we look at this data, we must try to distinguish those trends which are due solely to the existence of this new clinic in a part of Nepal so unlike the foothills.

Examination of the 1972 figures (before the opening of the Biratnagar Clinic) indicates that of the 1057 patients then seen by the Trust clinics fully 404, or 38% had defaulted at some time during their treatment. The monthly composite figures for 1973-1974 shed more light on this problem of defaulters.[4]

COMPOSITE MONTHLY FIGURES FOR BNMT TB CLINICS (1973-74)

Nepali month	3	4	5	6	7	8	6 month period	
Total # New Patients	109	85	83	74	124	99		
Total # Cured	15	19	16	14	17	11	92	
Total Cured a) with default	7	10	11	10	12	6	56	61%

							6 month period
Total Cured b) without default	8	9	5	4	5	5	36 39%
# of New Defaulters	51	50	52	77	65	78	
# of Returned Defaulters	40	26	23	35	37	38	

From these figures we can see that it is only a minority (39%) of those patients cured of tuberculosis that were able to do so without defaulting on treatment at some time during their therapy. Likewise, it was the large majority of those cured (61%) who stopped therapy at least once during the course of treatment. The figures from the Ilam clinic tell us that defaulting is not strictly a function of distance (which it may be for utilization). Most of the people who default live within a reasonable distance of the clinic. Of 112 patients who live the closest to the Ilam clinic, 30 of them (27%) defaulted at some time during their treatment. Of those who lived between 3-5 hours walk from the clinic (a journey easily completed within a day) 29 of the 56 patients seen defaulted during their therapy- 52% of the patients in this group. Thus, those who are most likely to use the clinic are also most likely to discontinue their therapy.

It was noted before that the Ilam clinic is utilized by men to a much greater extent than it is by women. This trend is also found to exist in defaulting. Of the first 300 patients seen in the Ilam clinic, 93 (31%) defaulted during treatment. The following table gives a breakdown of this population.

UTILIZATION AND DEFAULT BY SEX AT THE ILAM TB CLINIC

Total number of patients	300	
male patients	194	65%
female patients	106	35%
Total number of defaulters	93	
% of patients defaulting	31%	
Male defaulters	51	
% of total male patients	26%	
Female defaulters	42	
% of total female patients	40%	

The data tells us that not only are women less likely to use the clinic, but those that do are less likely to continue through to the completion on the therapy.

The large number of people who default during their treatment represent more than collections of unsuccessful cases. The discontinuance of the infrequent ingestion on anti-tuberculosis medication encourages the development of strains of myco-bacteria that are resistant to first line drugs. These are the agents that are the easiest and cheapest to obtain. Second line medications are expensive and generally are unavailable in Nepal. The development of resistant strains would thus be a devastating complication, should this occur. The high number of defaulters has been a chronic problem that the Trust physicians have been unable to solve. It is an indication that the wonders of western medicine can be a double-edged sword indeed. There can be no doubt that many lives have been saved as a result of their efforts. But there is also the very real

possibility that the vigorous dispensing of medication to a people who are not familiar with the traditions and understandings of the West may in fact be creating new health problems for future generations through the development of resistant strains.

There is no simple answer to the problem of defaulters and our approach to this difficulty will be discussed in the final chapter. However, some brief comments on it can be made now. The problem of defaulters is an expression of a health system that is based on doctors and hospitals rather than on paramedical personnel who bring medical care directly to the homes and villages. The Nepali are a people with strong ties to home and kin. They are mostly poor farmers who find travel difficult and expensive. They have large families and when illness strikes they are used to receiving aid from a religious shaman who is generally well known to them. They are accustomed to being taken care of in their homes by their families. The hospital and clinic are unknown and thus, potentially hostile institutions to them. The types of services they offer and what they must do to obtain them are foreign to their experience. They offer services, which in part, compete with those offered by family and friends. The inability of the British physicians to deal successfully with the problem of defaulters results in part from failure to appreciate this quality of the Nepali culture.

We have seen that the type of curative medicine offered to the Hill people of east Nepal, has not been successful. It has

involved a considerable input of highly trained personnel providing a service that is not well utilized. Though it is specifically chartered by the central government to restrict its activities to tuberculosis control, it has established, implicitly, a parallel medical care system that competes with the curative services offered by Nepali doctors in government hospital. Though the local Nepali physician may have an amicable relation with his British co-professional, patients frequently attempt to play off one physician against the other. If they do not receive the type of care they want from the government doctor, they will instead, go see the British physician and vice versa. Patients are aware that medicine at the British clinic is free and plentiful, where as the medicine at the government hospital frequently runs out and patients must buy their own. Pressure is then put on the British doctor to give medicine to people who have disease other than tuberculosis. Furthermore, the merchants of the hill bazaar towns are eager for social status that would enhance their rising economic fortunes. This frequently takes the form of having the British physician as a personal friend who of course, could be called upon to treat members of their family. The foreign doctor gets drawn into a web of social relations that he feels makes him a more intimate and well liked member of the community. In actuality, the status of his friendship is a prized possession that is sought after by the competing and conflicting interest groups of merchants and minor (but still important) government officials that compose what would pass for the middle class of the foothills.

Thus, the government's proscription that the Trust limit itself to the treatment of TB is a difficult, if not impossible limit to observe; and the doctor is encouraged to ignore it not only by his own sense of compassion for the vast amount of disease he is called upon to treat, but also by important Nepalis in the community who seek his friendship and medical advice. All of this serves to undermine the authority of the Nepali physician and solicit comparisons with government supplied services which clearly make them look inferior to those offered by the British.

D The Preventive Effort

The efficacy of the BCG vaccination program in eastern Nepal must ultimately rest on the effectiveness of the vaccine itself. The history of this vaccine has been one of varying results in different parts of the world.[5] Studies in India seemed to indicate that BCG did not reduce the incidence of tuberculosis. Trials in Puerto Rico and Muscogee, Alabama reported a reduction in incidence of 31% and 36% respectively[6] while the use of BCG in Britain has reportedly reduced the incidence of tuberculosis by 80%.[7] The reasons for these discrepancies have not yet been delineated. It has been suggested[8,9,10] that they may be due to differences in the virulence of the mycobacteria, vaccine deficient in production or from exposure to sunlight, nutritionally deficient hosts (this may be especially true in India), and/or the higher incidence of nontuberculous mycobacterial infections in Amerira and India than in Britain. The vaccine has had as many detractors[11,12,13] as supporters[14,15,16] and the wide variations in its reported effectiveness underscore our ignorance of the epidemiology and immunology of tuberculous infections.

The last word on this matter has probably not been spoken, but for the meantime, the issue seems to have been decided in favor of the effectiveness (though admittedly it may be a variable one) of the vaccine. On attempting to synthesize all the contrasting data from the disparate studies on this vaccine, René Dubos has set the tone for present public health attitudes

toward BCG when he said:[17]

> "After so many years of controversies, there is no longer any doubt that BCG vaccine can elicit a high degree of antituberculosis immunity in animals and men."

Here is where the matter rests. And it is with a basic conviction in its efficacy, but in continued ignorance of the many variables that might severely compromise this effectiveness, that BCG vaccine came to be introduced into third world nations.

The Britain Nepal Medical Trust was given the responsibility for BCG vaccinations of all children 15 and under in Kosi and Mechi zones. Though they began the program in November 1968 in the Terai districts of Morang and Sunsari (see page 10), work was not begun in a unified, full time operation until July 1970, in the hill district of Dhankuta.

The vaccinating team was made up of young Nepalis and visiting medical students from Britain and America. The vaccinators would rent a house in the district capital and use this as a base of operations. They would then go on vaccination treks that would last 2-3 weeks each. During this period, vaccinating teams of 3 would spend the night at the home of the village headman (Pradham Pancha) or in a nearby school. The following day they would split up and vaccinate in three separate areas, planning to meet up at the next days vaccination site by nightfall. This would continue until the vaccine was exhausted. Then the vaccinators would return to the base for supplies and

then begin another trek. While the trek was in progress, a Nepali, working as a publicity man, was always two days walk in front, informing the village chiefs of the teams expected arrival and insuring their cooperation for a good turnout. At the vast majority of vaccination sites, team workers were received cordially. Patient acceptance and enthusiasm for the program appeared high.

People frequently sought out vaccinators for general medical care. Supplies were limited to what could be carried and vaccinators were not equipped (nor necessarily trained) to dispense other medications. Many obviously ill patients with symptoms strongly suggestive of tuberculosis (fever, cough, night sweats, hemoptysis, weight loss, malaise), came to vaccinators and all that could be done was to refer them to the nearest outpatient TB clinic. These clinics were commonly a two day walk away and as might be expected, few of these clearly ill people ever came to the Hill clinics. The inability of the BCG vaccinator to provide other, even minimal medical services, is unfortunate. It represents a lost opportunity. A more comprehensive role for paramedical workers could easily be envisioned, and this point will be discussed in the following chapter.

A summary of the results of the BCG effort is shown on the following pages.

RESULTS OF BCG VACCINATION PROGRAM
BY THE
BRITAIN NEPAL MEDICAL TRUST

District	Morang	Sunsari	Dhankuta	Terathum
Date Commenced	May 68	May 69	July 70	Jan 72
Date Completed	Apr 72	Apr 72	Apr 71	Mar 72
Panchyats in District	61	46	38	40
Panchyats Visited	61	46	38	40
Total Population 1971-73 Census x 10^3	302	223	108	119
40% of Population is 15 yrs or Younger x 10^3	121	89	43	46
Total Vaccinations Given x 10^3	63	48	33	31
% of Total Population Vaccinated	21	22	31	27
% of Population 15 Yrs and Younger Vaccinated	52	54	77	67

RESULTS OF BCG VACCINATION PROGRAM
BY THE
BRITAIN NEPAL MEDICAL TRUST
(CONT.)

District	Sankuasuba	Ilam	Panchatar
Date Commenced	July 71	Oct 72	Nov 73
Date Completed	Apr 72	May 73	Apr 74
Panchyats in District	39	50	53
Panchyats Visited	37	50	53
Total Population 1971-73 Census x 10^3	114	140	146
40% of Population is 15 yrs or Younger x 10^3	46	56	58
Total Vaccinations Given x 10^3	35	50	43
% of Total Population Vaccinated	31	36	29
% of Population 15 Yrs and Younger Vaccinated	77	89	74

The districts that primarily concern us are Dhankuta, Terathum, Sankuasuba, Ilam, and Panchatar. These are all districts in the foothills and lack the public health conveniences of higher population density and good transportation. Furthermore, the BCG program in each of these hill districts was effected as a unified concerted effort by a team of paramedics trained specifically for that purpose. The Hill districts were completed one after another. The team moved on to the next districts when its campaign in one was completed, generally after nine months of vaccinating. The World Health Organization has determined that a coverage of 26% of the total population (66% of the child population) is a minimum baseline. Examination of the data will show that this minimum baseline was met in each of the Hill districts. With the exception of the Terathum District, the vaccinators were able to cover three quarters of the target population. In a region with no paved roads, no electricity, and some of the most mountainous terrain in the world, this is indeed an impressive feat.

This accomplishment establishes the importance of paramedical personnel and validates the feasibility of a canvassing operation as a mechanism of health care delivery in this poor mountainous nation.

As worthwhile an accomplishment as this certainly is, its long term advantage to the Nepali people is in doubt because of the lack of an effective mechanism to provide continuing BCG coverage. This is an important point. There continues to

be a high infant and child mortality rate due mostly to gastrointeritis and non TB respiratory infections. As we have seen in the previous sections, this high mortality rate encourages a high fertility rate. With a sustained high fertility rate and continuing death of vaccinated children from conditions other than TB, it becomes clear that with each passing year, the percentage of vaccinated children will continue to decline. A point will soon be reached when that percentage falls below the minimum acceptable baseline. Thus, in order for BCG to have sustained benefit, there must be a mechanism to provide for continuing vaccination of newly born children as well as children that may have been missed during the initial campaigns.

A NEW DIRECTION FOR HEALTH POLICY IN NEPAL

A. The Role of the Western Model

Disease is an expression of social living. It is a measure of the stress that is endured from the necessary yet imperfect adaptations that men make with each other and with their environment. We know that for a nation to be wealthy does not imply the elimination of disease but rather the replacement of diseases that afflict poor people by those that afflict rich ones.

People in the western world suffer from "rich" diseases: cirrohsis, diabetes and atherosclerotic cardiovascular disease. These diseases are a function of how we live. They are in large part self inflicted: we smoke, drink and eat to excess. Western healers study the physiology of deranged function while largely ignoring the social pathology which makes such excess commonplace; a social pathology that is such an intimate part of the way we live that it is difficult to precisely articulate its presence. The values of the western health care model are physician centered-hospital located and patient intensive.

People in Nepal suffer from "poor" diseases. They are debilitated by tuberculosis, infectious/parasitic gastroenteritis, pneumonia, and malnutrition. Similarly, their diseases are a measure of how they live. They are an expression

in somatic terms of a life that is impoverished, Hindu and agrarian.

World politics are changing and we are becoming increasingly aware of the so-called third world nations. As the demand for raw materials increases, resource management will increasingly become a prime mechanism of national development. In exchange for raw materials, the West will offer its vast technical expertise. Medical expertise will be a major component of this exchange. But along with its technology, the West also exports a value system. The central aspect of this value system is the notion of progress- the idea that poor under-developed nations progress to and hope to become rich developed nations. This implies a sense of western cultural superiority and seems to suggest that the problem with poor countries is merely that they do not have what we do and that the appropriate role for the West is simply to give them what we've got. We are seeing now that western skills must be adapted to their new environments, not merely transferred.

There is no doubt that the world is becoming increasingly westernized. But this process is a historic trend which should not be associated with an improved global ethical stance. In order for cross cultural health efforts to be successful, there must be a committment to the ethical equality of all cultures. We must come to see cultures as

structures with their own integrity. We must be leery of thinking in the value laden terms developed-under developed, rich-poor, advanced-backward because of the implicit superiority the notion of linear progress seems to award to the West. It is an award that is not deserved. Two examples come to mind.

First, it is "maladaptive" for the Hindu farmer to defecate near his water supply and we would be correct in identifying this as a prominent disease vector. It is equally "maladaptive" for the middle age American to smoke heavily and indulge himself of a diet rich in fat and cholesterol. And this too is easily identified as a behavior that will increase morbidity and mortality. The point here is that western technology for all its very real advances has not developed the expertise in behavior modification applicable to situations where the source of morbidity is so obviously a behavioral vector.

Second, there is a tendency for western trained physicians to look askance at indigenous religious healers. Such a tendency is an expression of the western dichotomy between science and religion. It is a tendency which is re-inforced "in the field" by the "objective" therapeutic failures of indigenous healers. But it is an attitude which misreads human nature. The ostensible dichotomy between science and religion notwithstanding, western physicians have a

definite spiritual role to play in the healing of their sick. The fact that they are given little training in appreciating this as a legitimate human need indicates a basic failing of western training. Whether we care to admit it or not, the structure of our healing arts is imbued with a spiritual authority. In a very real sense the doctor is a priest, the hospital his temple, the stethascope his amulet, the medical student his novitiate, and the white coat the robe of his authority. It is a basic human need that the suffering seek from their healers whether he be shaman priest or university trained internist.

We see from these brief examples that western medicine has its limitations and illusions. It unquestionably has its technological advances too. The difficulty sets in when one attempts to separate the one from the other. Let us see now why health problems in a country like Nepal differ from those in the West.

Medical problems in Nepal differ from those in the West because they cannot be effectively treated by doctors. The principal causesof morbidity and mortality for children are diarrhea, respiratory infections and malnutrition.[1] Twenty five per cent of Nepalese children die before their fifth birthday primarily from diseases that are preventable in the West.[2] The modalities of western medicine are

drugs, vaccines and surgery. Those few processes that are amenable to such therapy can be well controlled but most illnesses that afflict Nepalis are not well suited to these regimens. This failing is particularly prominent in child health. The diarrhea, pneumonia and malnutrition that is common cannot be effectively treated by doctors. The causes of these diseases are as much poverty, overcrowding, ignorance, poor ventilation and hygiene as it is pathophysiology. Consequently, solutions to these problems will come from the agricultural and social sciences as much as from the medical sciences.

B. The Problem of Health Care Policy in a Developing Nation

Health, education, population and economics are interdependent social indices. Influences on one will feedback upon the other so that none can be treated in isolation. Morbidity and mortality statistics have a closer correlation with per capita income than with specific health measures[3] suggesting that the health care planner in a developing nation must have a broadly encompassing view of the many interrelated problems facing his country. These problems are complicated by the very limited resources upon which the policy maker can draw. The ratio of physicians to patients in Nepal is one per 80,000[4]. This is among the lowest in the world, exceeding those found in Chad, Nigeria, and Basutoland. The percapita expense for health care appropriated in the national budget is 53¢ per year.

We have shown that the answer to Nepal's health needs is not necessarily more physicians and hospital beds. Rather, it appears that new schools, better roads, and improved agricultural know how will contribute more to the quality of life than a given increment in the number of doctors. But even this realization is beside the point. As a general direction for national planning, it is becoming clear that the elements determining improved health care are multifactorial and not easily reduceable to statistics on manpower and treatment

facilities. The problem facing nations like Nepal is, given a fixed sum of money, how to know where it will produce the greatest social good. Is it better to build a road, or to supply farmers with improved strains of wheat, or build more schools, or mount a BCG vaccination program ? These are the basic questions that policy makers must ask themselves. The technology and theoretical constructs of the West are not yet sophisticated enough to offer any guidelines. This is what makes policy planning and resource allocation in poor nations so difficult; decisions must be made without definitive knowledge.

What can we offer these policy makers? What appears at the present time to be a reasonable way to proceed?

To begin with, and this is most important, the public health projects of the central government must not operate at a level of sophistication that is beyond this poor,agrarian, Hindu nation. Specifically, this means that they must be low cost, low technology projects that can reach large numbers of the population. With this in mind, smallpox and BCG vaccination programs as well as efforts to eradicate malaria are relatively low in cost and do not require sophisticated personnel. Significant reduction in morbidity and mortality can be expected to result from governmental intervention here.

The same cannot be said for attempts to eradicate existing cases of tuberculosis. This disease is very much a function

of the way these people live. Their cramped, poorly ventilated homes and a diet often marginal in protein exaccerbate its virulence. It is unlikely that it could be eliminated in the absence of a significant rise in the standard of living. Thus it appears that policy planners will have to accept a high level of tuberculosis in the present population. An all out "war" on tuberculosis via the curative approach would be expensive and given the low standard of living that would persist, its chances of success would not be great. It would be better to accept a high baseline for the present generation and divert funds to an aggressive BCG program hoping that as the standard of living improves through the development of roads, schools, and agricultural skills, a decrease in the morbidity and mortality from tuberculosis will begin to be seen in the coming generation.

C. The Future of Health Care in Nepal

The approach to health care problems in a developing nation must be mindful of the limited financial resources available and must respect the peoples traditions and institutions. These twin provisos are basic and immutable. Ignorance of them will lead to failure. This is especially important in cross cultural foreign aid efforts. Western notions of progress can easily lead a developing nation to overcommit its already limited resources for projects that are poorly utilized by their people. Such actions are in no ones best interests.

The mechanism and infrastructure of aid must be appropriate to the setting. It must buildon the assets of the society and compliment its social structure. The average Nepali is a subsistence level farmer with a large family. These families are widely dispersed over mountainous terrain. This is the core unit of the society and health care efforts must be designed to serve this unit, even if the types of services offered are rudimentary.

Nepal lacks money, skilled personel and roads. Thus, its health care system must not be based on any of these resources. Instead, the system must draw on this nation's major resources: The strong ties of village culture and the large number of unemployed, unskilled young adults who could function as paramedics. Ideally, they would comprise

a small group that would use a clinic as their base of operations. They could travel from village to village at regular intervals to maintain vaccinations against smallpox and tuberculosis. (DPT and Rubella require multiple vaccinations. This creates an administrative problem of scheduling and record keeping that might not be easily effected.) Where needed, they could continue spraying efforts aimed at the eradication of malaria. They could disseminate family planning information and undertake rudimentary mother-child health clinics. They could make referals to the government clinic and transport medicines to villages far removed from these few facilities.

Such an approach to health care delivery would reinforce the home and village as central institutions in Nepali culture. The paramedics would solicit the aid and cooperation of local village elders thereby drawing on a source of traditional authority that is centuries old. Furthermore, a mobile band of paramedics would periodically visit villages on bazaar day thus availing themselves of the large numbers of people who partake in this unique economic and social gathering.

The use of paramedics would insure that all Nepalis receive at least some health services from the central government. Because the society is agrarian and traditional,

and because the government lacks sufficient resources, these services should be confined to health education and the prevention of diseases for which adequate vaccines now exist. Physician centered-hospital based curative services may continue to be offered, especially in the larger population centers, though the effect that they will have on the population will not be great.

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